File-5681

Exploration Examination Report
July 12, 1978

Todilto Exploration & Development Corporation
Navajo Allotted Uranium Lease
NOO-C-14-20-5681
Section 13, Township 13 North, Range 11 West, NMPM
McKinley County, New Mexico

U. S. Geological Survey
Conservation Division
Area Mining Supervisor
P. O. Box 26124
Albuquerque, New Mexico 87125

Dale C. Jones
Mining Engineer
July 20, 1978

July 12, 1978, the writer inspected Todilto Exploration & Development Corporation's (TEDCO) Navajo Allotted Uranium Lease NOO-C-14-20-5681. He was accompanied on the inspection by George Warnock, President of TEDCO.

Lease -5681 occupies approximately 160 acres in the north half of the north half of Section 13, T. 13 N., R. 11 W., in McKinley County, New Mexico. TEDCO acquired the lease October 8, 1975, by competitive bid in Navajo Allotted Land Sale 7 and has conducted limited exploration drilling within the property since approval of the exploration plan June 28, 1976. The purpose of this inspection was the examination of the eighty-seven boreholes drilled to date.

The involved lease is located on the northwest side of Haystack Mountain, a flat topped mesa elongated in an east-west direction, which reaches a maximum elevation of 7833 feet above sea level. The terrain within the leasehold consists of the steeply sloping north flank of the mountain to the east and the gently sloping land at the base of the mountain to the west (see attached topography map). Elevations range from about 7000 to 7700 feet above sea level, and the drainages are minor, intermittent arroyos draining to the north and northwest. The climate of the area is semi-arid with an average annual rainfall of about 12 inches. Most of this rainfall occurs in July and August. Vegetation consists of native shrubs and grasses and juniper trees, and the fauna in the area are probably insects, reptiles, birds, rodents and small predators typical of northwestern New Mexico.

The primary land use within the leasehold is livestock grazing, and about one-half acre in the northwest corner of the lease is fenced off for the residence of Mary Delgarito. The lease is situated within the highly developed and active Ambrosia Lake uranium mining district, and uranium mining operations have been and are being conducted in the immediate vicinity of the property. In fact, it should be noted that Haystack Mountain was the site of the first major uranium discovery in New Mexico by Paddy Martinez in 1950. TEDCO presently conducts both open-pit and underground uranium mining at its Haystack Mine in Section 13, T. 13 N., R. 11 W., and in Section 19, T. 13 N., R. 10 W. These operations are being conducted under private mineral leases issued by the Santa Fe Pacific Railroad Company (SFP) and a mineral lease issued by the Energy Research and Development Administration (ERDA). Underground uranium mining was also conducted in the 1960's at the now abandoned Mesa No. 2 Mine in Section 18, T. 13 N., R. 10 W., under a Navajo allotted mining lease. Cinder mining has been conducted in the past at the El Tintero cinder cone in Section 30, T. 13 N., R. 10 W.

The primary uranium hosts in the lease area are the middle Westwater Canyon Member of the Jurassic Morrison Formation and the middle Todilto Formation of the Jurassic San Rafael Group. Since the members of the well known Morrison Formation outcrop within the leasehold, only a few of the boreholes were expected to penetrate the Westwater Canyon. TEDCO's prime exploration target is the Todilto Formation, a massive limestone which lies well below the Morrison, and all boreholes will penetrate the stratum to bottom in the underlying Entrada Sandstone of the San Rafael Group. The Todilto averages 10 to 12 feet thick in the lease area and thins to the west and thickens to the east. The depth of the Todilto is about 120 to 140 feet at the lower elevations of the lease.

TEDCO has drilled eighty-seven boreholes within the property to date. Failing 1000 drilling rigs were used to rotary drill the 5-inch diameter holes to depths ranging from 125 to 150 feet. The majority of the holes were drilled in the western half of the lease on 50- to 200-foot centers with a small number of holes drilled in the eastern half on 200-foot centers. Most of the boreholes were drilled dry, but a foam drilling medium and water were used when hole condition problems were encountered. All of the holes have been probed on 0.5-foot intervals by TEDCO using their own 500-foot reel probe (geiger counter), and roughly 20 percent of the holes have been check logged by Century Geophysical Corporation using standard gamma ray probes. All required data from the exploration have been submitted to the USGS.

At the time of this inspection, none of the eighty-seven boreholes had been permanently abandoned, and no reclamation had been performed. All boreholes have been temporarily plugged at the surface with short pieces of square or round, wood mine stulls or covered with a rock. The drilling sites are free of litter, and the operations have caused very little surface disturbance. Pits were not used to contain the fluid drilling medium discharge at boreholes requiring the use of foam and water. However, large, unsightly discharges of foam and cuttings were not evident, presumably due to the shallow depths of the holes. An access road was constructed up the steep north side of Haystack Mountain at the start of the exploration program. This road is still passable, but some minor repair work will be required before the road can be used for drilling operations. No water bars have been placed on the road.

According to the approved exploration plan, all surface disturbance caused by drill site and access road construction will be bladed, contoured and revegetated to the satisfaction of the lessor and the Area Director, BIA. All boreholes will be permanently abandoned in compliance with the requirements of the New Mexico State Engineer. This will involve filling dry holes to the surface with drilling cuttings and wet holes with

drilling mud or cement slurry as specified by the State Engineer. Each hole will be marked with a 5-foot length of 2-inch by 2-inch or 2-inch by 4-inch wood imbedded in the hole plug until only 12 inches remains above the ground surface. Presumably, this abandonment and reclamation will be performed upon completion of the drilling program.

No activities were in progress at the time of inspection. According to Mr. Warnock, TEDCO plans to resume drilling August or September of this year. Eight holes will be completed in the close spaced drilling area at the base of Haystack Mountain, and eight holes will be completed on the road up the north side of the mountain.

TEDCO is to be commended for its cleanliness and control of surface disturbance in its operations. The writer did notice certain problems in the operations regarding compliance with USGS requirements, and these problems are listed below. TEDCO will be informed of these problems so that appropriate action may be taken.

1. Water bars should be placed on the access road up the north side of Haystack Mountain as specified in the approved exploration plan.

2. The approved exploration plan indicated that approximately 20 percent of the boreholes would be cored. The USGS requires the submittal of lithology logs for all core holes.

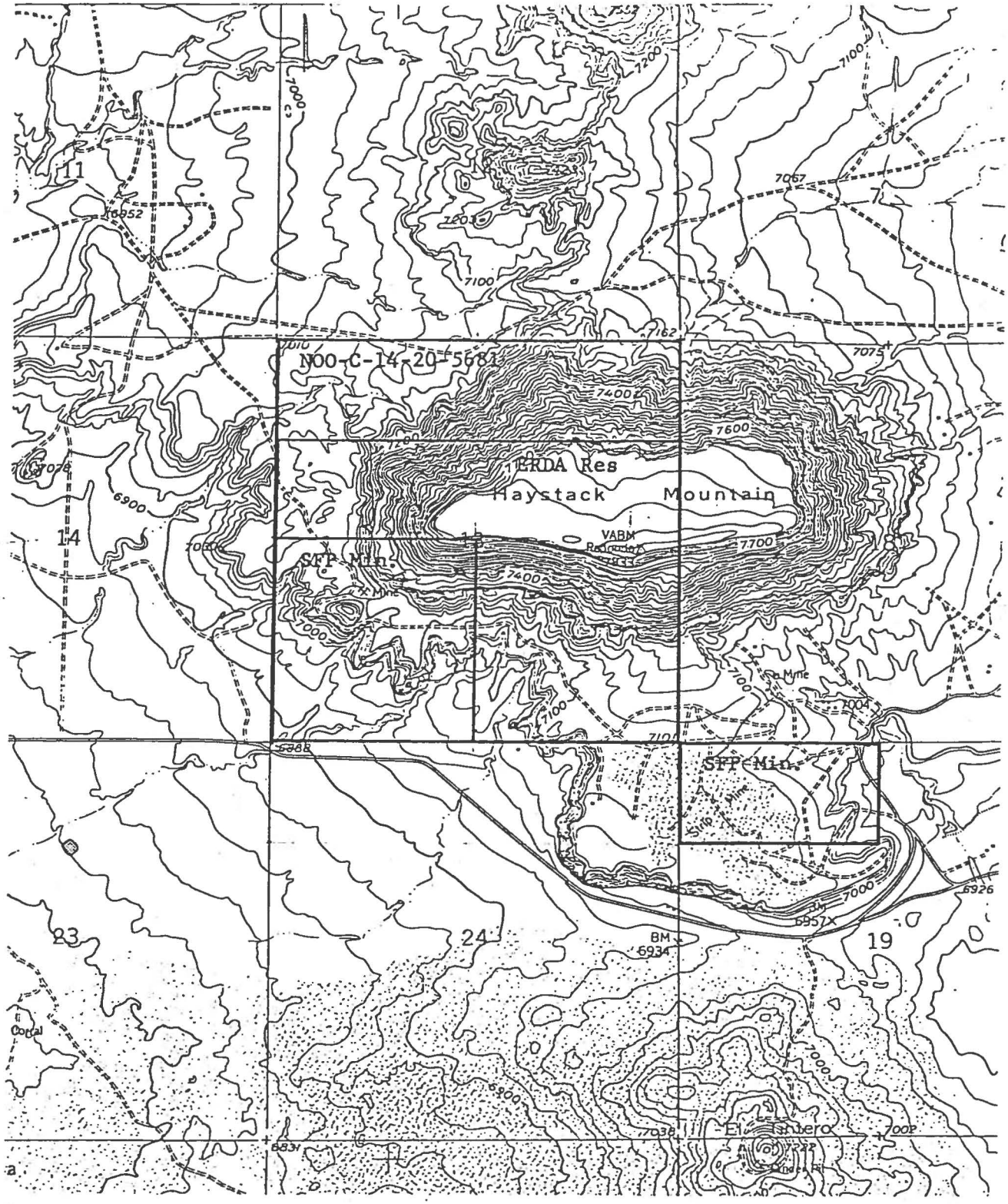
3. Pits should be used to contain any and all fluid mediums (foam, water, etc.) used on drilling the boreholes.

4. TEDCO plans to permanently plug all boreholes by filling them to the surface with drilling cuttings. The USGS requires that a 5-foot cement or concrete surface plug be placed in each hole.

(ORIG. SGD.) DALE C. JONES

Dale C. Jones
Mining Engineer

Original to: Area Director, Navajo Area Office, BIA
cc: Superintendent, Eastern Navajo Agency, BIA
Chief, Branch of Mining Operations, USGS
Through: Conservation Manager, Central Region, USGS
File (-5681)



TOPOGRAPHY MAP

Photo A

Open-pit uranium mining operations at TEDCO's Haystack Mine (looking south from the top of Haystack Mountain) in Section 13, T 13 N, R 11 W and Section 19, T 13 W, R 10 W; El Tintero cinder cone visible in upper center of photo; tailings disposal area at The Anaconda Company's Bluewater Mill (uranium) visible in upper right corner of photo

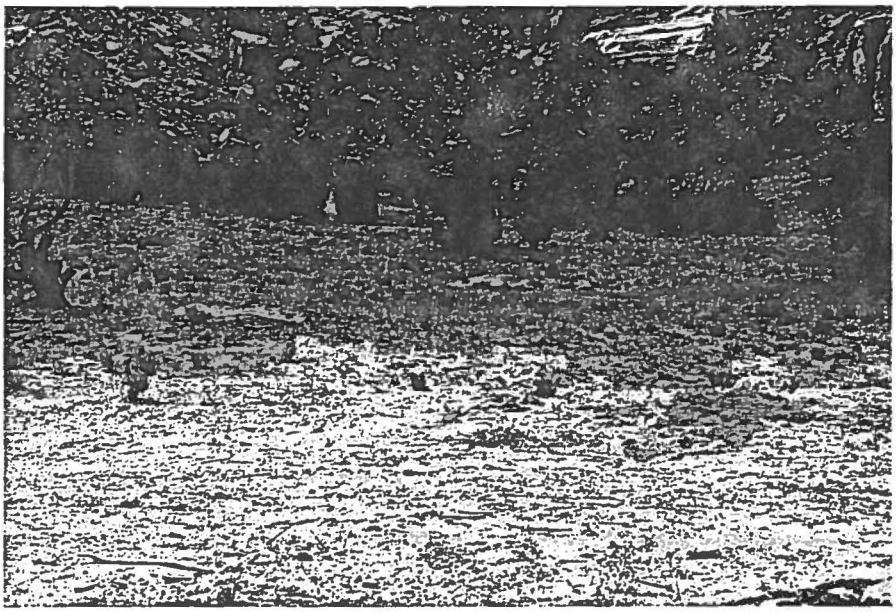
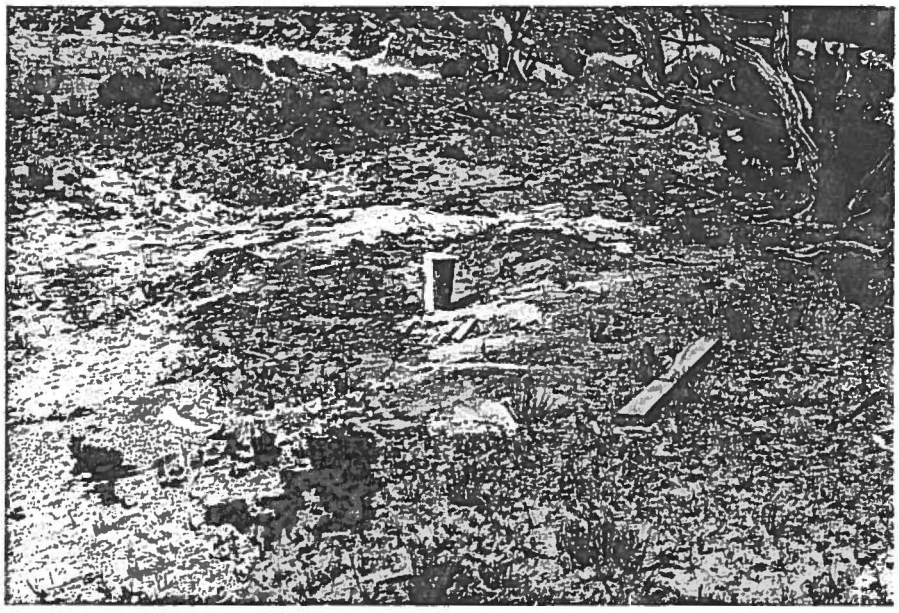


Photo B

Close spaced drilling (50-foot centers) at the northern base of Haystack Mountain in the western portion of lease -5681



Photos C

Temporary wooden plugs (short pieces of mine stulls) in boreholes in close spaced drilling area in the western part of lease -5681

Photo D

Rock placed over borehole collar in close spaced drilling area in the western part of lease -5681

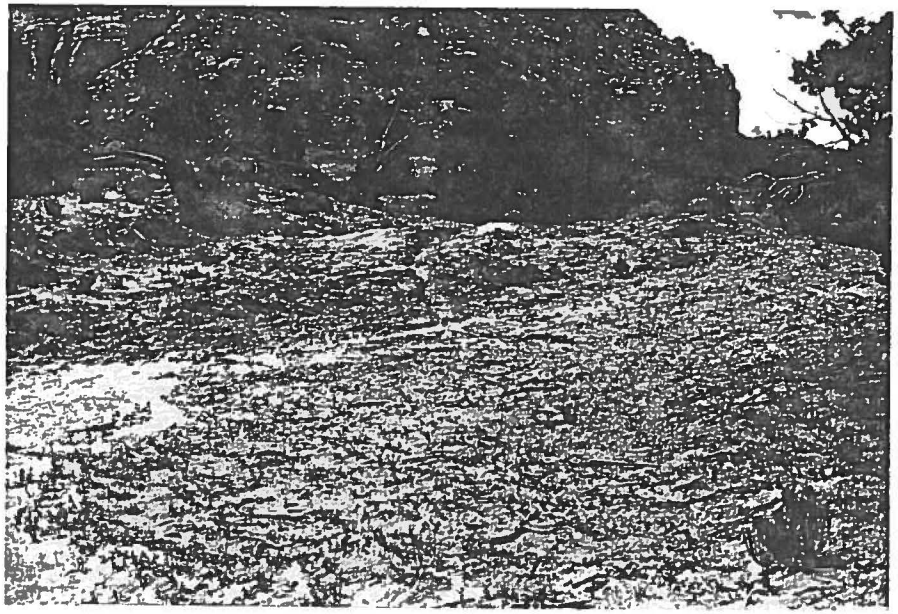


Photo E

Discharge of foam, water and drilling cuttings at borehole in close spaced drilling area in the western part of the lease; this borehole completed the later part of 1977

Photo F

Northwest corner of lease -5681 as seen from north slope of Haystack Mountain; residence of Mary Delgarito visible in center of photo; closely spaced drilling area (50-foot centers) is in lower left corner of photo (arrow).

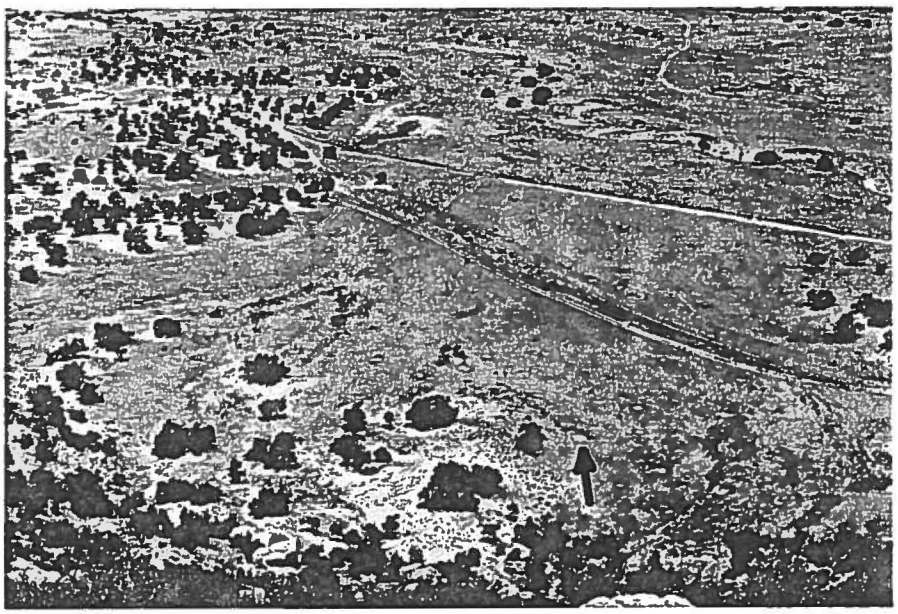


Photo G

Central portion of lease as seen from north slope of Haystack Mountain; residence of Mary Delgarito visible in upper left corner of photo; closely spaced "pock marks" (arrow) are harvester ant hills not drill sites.